CHAPTER-7: SUMMARY AND CONCLUSIONS

Research on medicinal plants has been an important facet of biomedical research in India. It received special attention in the post-independence period. In the present study, an attempt has been made to quantify the effort and achievements on the subject from 1947-48 to 1976-77. The study covers historical aspects, activities of various agencies engaged in this work (viz: the Central Councils, State Governments, Universities, other National Agencies, Foreign Agencies and International bodies, Pharmaceutical Industry etc.), foreign trade in medicinal and aromatic plant products and the present status of the research on medicinal plants.

The parameters of study chosen for different agencies varied with nature of functions of the agency and accessibility of data. These included organizational structure, method and quantum of funding research by individual agencies, publications, patents, production, export earnings, import substitution, training of personnel etc. The source materials were annual reports of various laboratories and Councils, Inquiry and Review Committee reports, technical publications—books, monographs and journals and personal communications through visits and discussion, correspondance and questionnaires.

The study revealed that the inputs for research programmes on medicinal and aromatic plants are considerable in India. The expenditure through four Central Councils viz: The Indian Council of Medical Research (ICMR), Central Council for Research in Indian Medicine and Homeopathy (CCRIMH), Indian Council of Agricultural Research (ICAR) and Council of Scientific and Industrial Research (CSIR) alone has been more than 20 crore rupees for this activity (Chapter: 4.1-4.4). State governments did not contribute much in the field of research on medicinal plants (Chapter: 4.5).
The interest in the study of medicinal plants was initiated by the ICMR. As a result of the impetus given by the IRFA (Indian Research Fund Association, which was renamed as the Indian Council of Medical Research after independence), in early days (from 1926), the interest spread to other agencies viz: I.C.A.R., C.S.I.R. and C.C.R.I.M.H. There is more awareness of the potentialities of plant products and investments in research also considerably increased after the establishment of C.C.R.I.M.H. in 1969. The total expenditure on this activity for 7 years (1969-70 to 1975-76) by C.C.R.I.M.H. has been Rs. 546.40 lakhs as against Rs. 68.55 lakhs for the preceeding 7 years (1962-63 to 1968-69) under the I.C.M.R. (page 44).

Medicinal plants research under the I.C.A.R. has limited objectives, mainly dealing with the cultivation aspects only (Chapter: 4.3). Other agencies engaged in this activity embrace all aspects of the problem viz: literary, anthropological and geographical surveys, experimental screening, standardization, clinical evaluation etc. The C.S.I.R. has the largest infrastructure for R&D and has played a significant role in research on the subject through eight of its laboratories and sponsored research (Chapter: 4.4). Though the methods used in the study for measuring the research output have certain limitations as these can not gauge the scientific merit, the output in quantitative terms of the number of papers published, patents taken, production value, training of personnel, dissemination of information etc. for C.S.I.R. is more.

Universities producing the scientific manpower in a variety of disciplines provided the most important input for national and regional research laboratories, industry and other agencies engaged in research on
medicinal plants. The number of doctoral dissertations produced on the subject from 1947 to 1976 was 969 as against 16 before 1947. More than 50% of doctoral dissertations and research papers on medicinal plants emanated from 6 universities viz: Calcutta, Allahabad, B.H.U., Delhi, Agra and Bombay (pp. 68-70).

Though the country has a large pharmaceutical industry with more than 3000 allopathic and over 2000 Ayurvedic and Unani pharmaceutical companies, R&D facilities exist in only about 40 companies. The R&D teams in these are mostly not separable from quality control and production work. Fundamental research is conducted only at a few centres. Research on indigenous medicine, save for cultivation for own use and some screening work at 2-3 centres has not attracted much attention from the Industry. Efforts are now being made to make the industry fulfil its R&D obligations (pp. 91, 92).

In spite of the existence of inter-council co-ordination committees, very little co-ordination is discernible between different agencies. Information collection, storage and retrieval systems are poor. As a result valuable research findings are lost and forgotten for want of compilation in suitable forms and further pursuit. The I.C.A.R. financed about 200 ad hoc schemes on the subject at an estimated cost of Rs. 40 lakhs in three decades (pp. 49, 50); the data regarding published papers, development of new varieties or processes from these is not available for analysis and possible exploitation. This may not be a solitary example of exercises in futility.

Cultivation and foreign trade on medicinal and aromatic plants leaves much to be desired but in spite of a state of neglect, there has been much progress in export earnings and decrease in import expenditure of many items
This has been possible through the efforts of C.I.M.P.O. of C.S.I.R. and project M & A plants of I.C.A.R. There is, however, tremendous scope for improvement in this area.

In recent years some good reviews and bibliographies have been produced both on general aspects and on the use of medicinal plants in specific ailments. This is a welcome step as such a stock taking was very much needed to know what has been achieved. The country is estimated to have about 20,000 plant species of which about 2,500 are of medicinal value and nearly 1,300 plant species have odorous principles. From the available reports, it appears that though nearly all of the plant species with claims of medicinal usefulness have been screened for one or two aspects, exhaustive studies covering all aspects (pharmacognostic identification to clinical trials) are available only on a few plants. A recent bibliography lists about 4,000 entries on 2,500 Indian plants screened for pharmacognostic, chemical, pharmacological or clinical aspects. Large scale screening has been done in the last 3 decades at C.D.R.I. Lucknow, CIBA Research Centre, Bombay and at various centres in the country under the projects sponsored by I.C.M.R., C.C.R.I.M.H. and C.S.I.R.

The present study reveals that we have made good progress in some aspects of research on medicinal plants viz: (a) anthropological, literary and field surveys for collection of claims and (b) pharmacognostical, chemical and pharmacological screening. Clinical studies have been carried out on only a few plants. Time is now ripe to move into the next phase of the programme, that of intensive studies on a select number of plants with promise. Based on a survey of literature, 30 such plants were identified which have been thoroughly investigated from all angles including clinical trials.
Developmental research on sound business lines is needed to find out useful medicines from these potential drugs.

Industrial participation and developmental work have so far been neglected areas. Only one government agency, the C.S.I.R., has paid some attention to this aspect in recent years. It took more than 72 patents pertaining to researches on medicinal plants and established a patent office and links with the National Research Development Corporation (NRDC) for liaison with Industry and commercial exploitation of research results. The C.S.I.R., through C.I.M.P.O has helped the country to produce, between 1965 and 1973, medicinal and aromatic plants and their products claimed to be worth Rs. 15.09 crores, which pays for the entire expenditure for research on the subject through 8 of its laboratories (pp 58, 61).

We have thus considerable experimental data and some basic information from researches carried out on medicinal plants in the post-independence India. The activity has been fragmented and largely academic. The basic questions and problems, that of developing effective herbal drugs and cheaper remedies, import substitution, self reliance etc. remained unresolved. We should now build up coordinated programmes for next 5-10 years, with special emphasis on clinical, developmental and industrial research to exploit these indigenous potentialities.